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Beng Keong et al.

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(54) **WICKING ACCUMULATED INK AWAY FROM OPTICAL SENSOR IN INKJET PRINTER**

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(51) **Int. Cl.**

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B41J 29/38	(2006.01)
B41J 2/205	(2006.01)
B41J 2/165	(2006.01)

(52) **U.S. Cl.**
USPC **347/19**; 347/14; 347/15; 347/22; 347/29

(58) **Field of Classification Search**
USPC 347/14, 15, 19, 6, 22, 29
See application file for complete search history.

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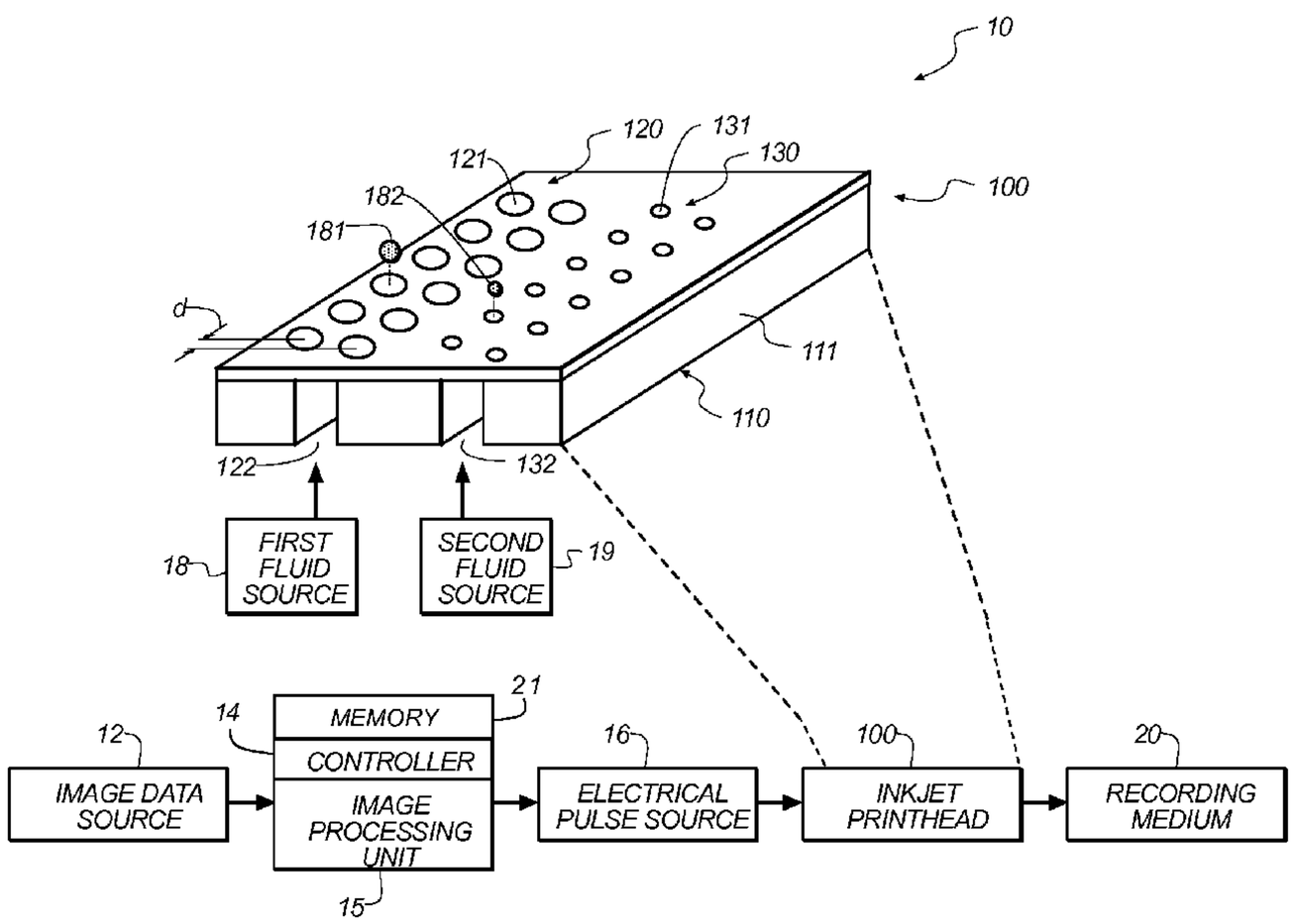
(57) **ABSTRACT**

An inkjet printer includes an inkjet printhead having a printhead die with an array of nozzles, and a media advance system for moving recording medium along a media path toward a print region. A carriage moves the inkjet printhead back and forth across the print region, and the carriage includes a holding receptacle for the inkjet printhead. The holding receptacle includes a bottom portion having an opening into which the printhead die extends. A viewing hole is disposed in the bottom portion of the holding receptacle for providing an optical pathway between an optical sensor and a portion of the media path. A wick is configured to contact the bottom portion of the holding receptacle proximate the viewing hole for removing accumulated ink.

13 Claims, 17 Drawing Sheets



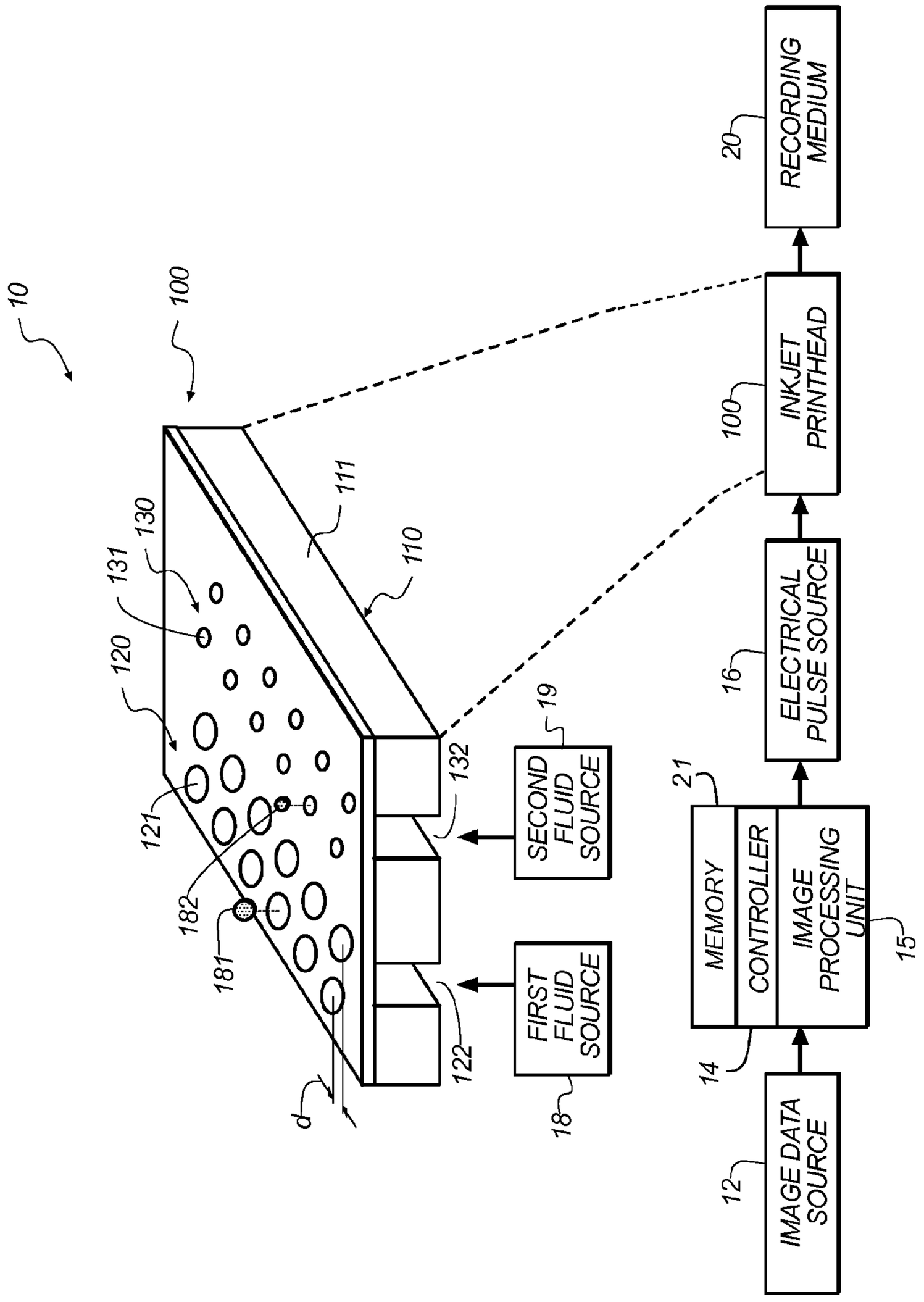

10
100
111
110
130
131
120
121
182
181
122
d
132
19
SECOND FLUID SOURCE
18
FIRST FLUID SOURCE
RECORDING MEDIUM
20
INKJET PRINTHEAD
100
ELECTRICAL PULSE SOURCE
16
MEMORY
CONTROLLER
IMAGE PROCESSING UNIT
21
15
14
IMAGE DATA SOURCE
12

FIG. 1

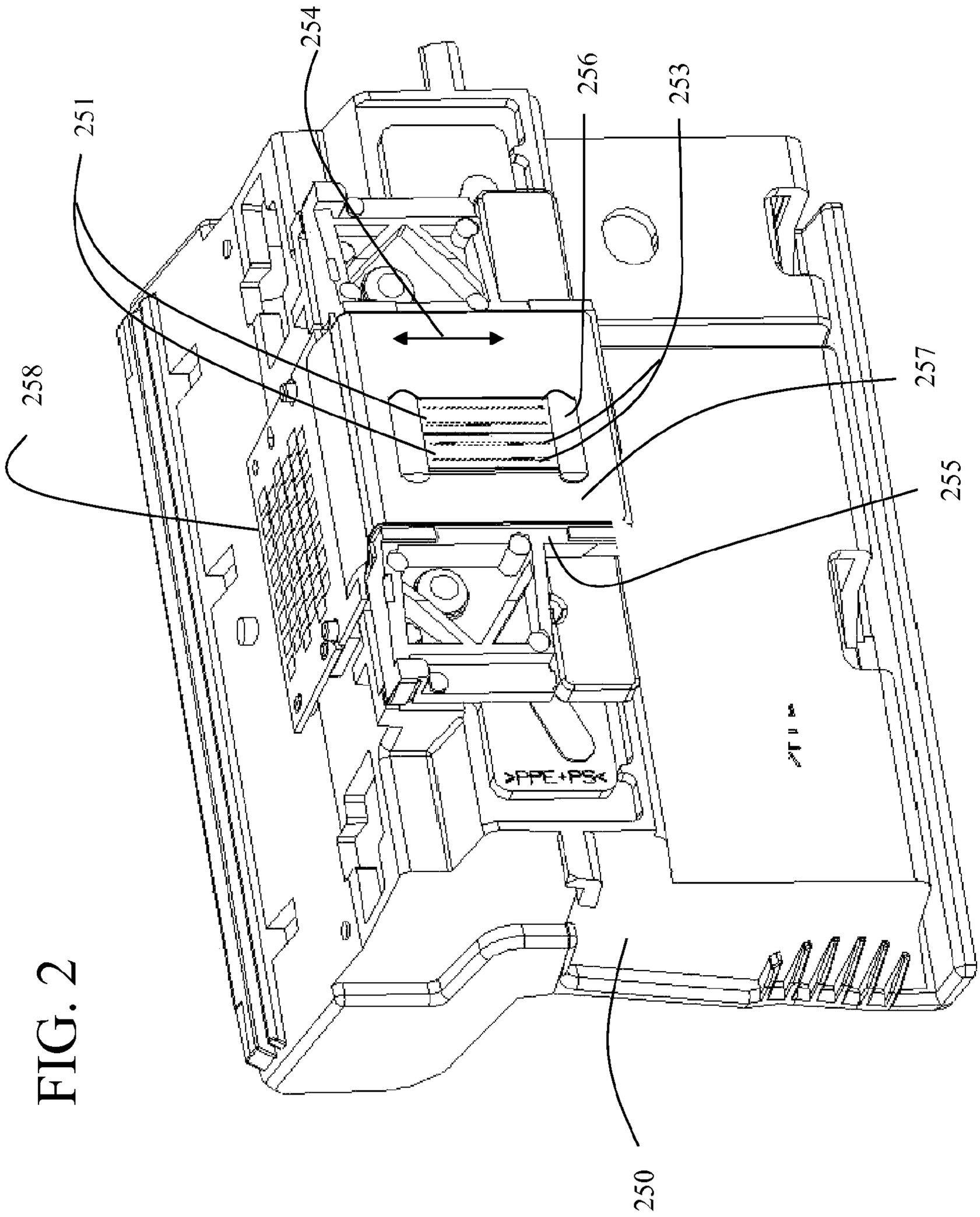
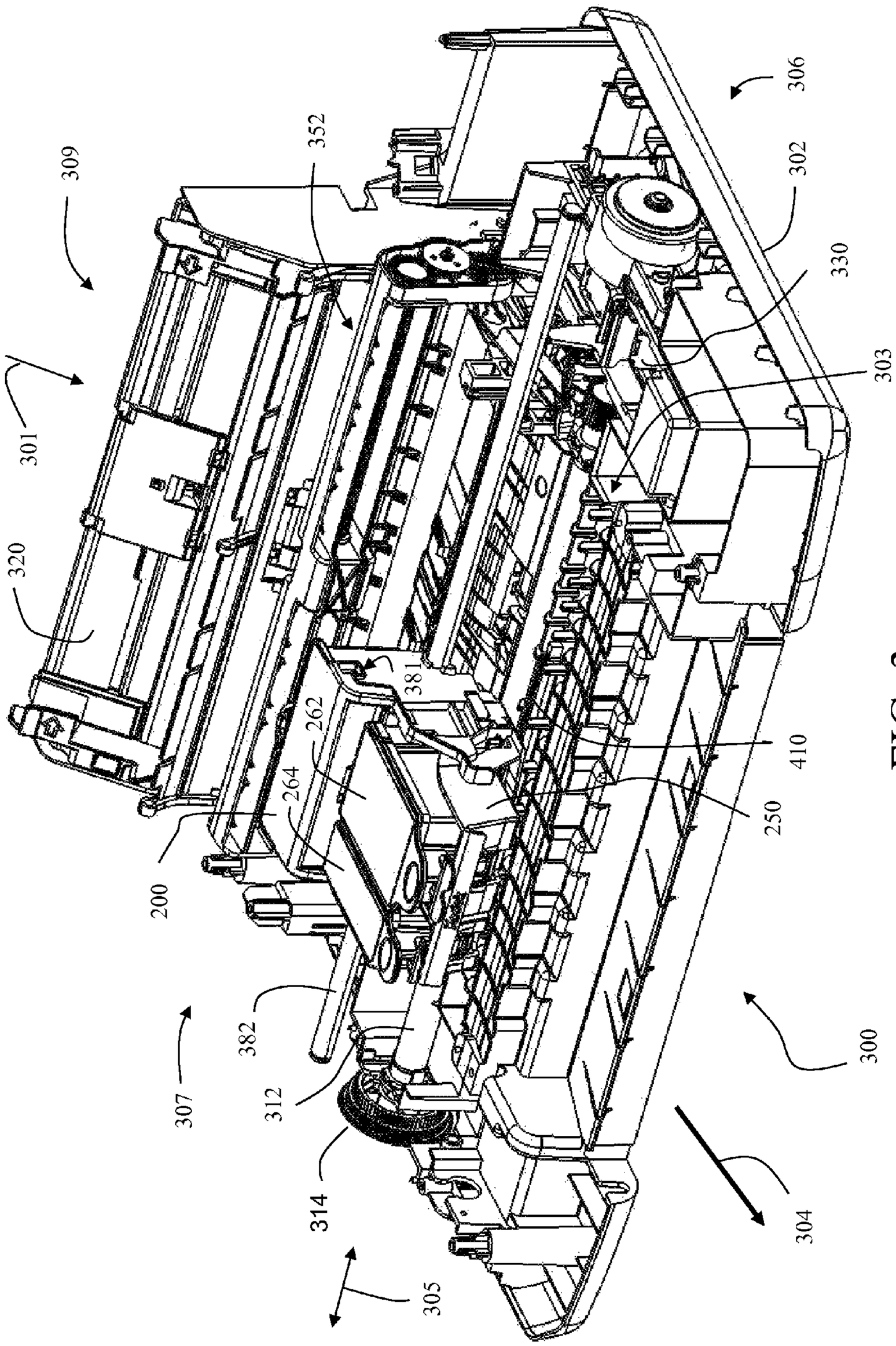


FIG. 2


309
352
306
302
330
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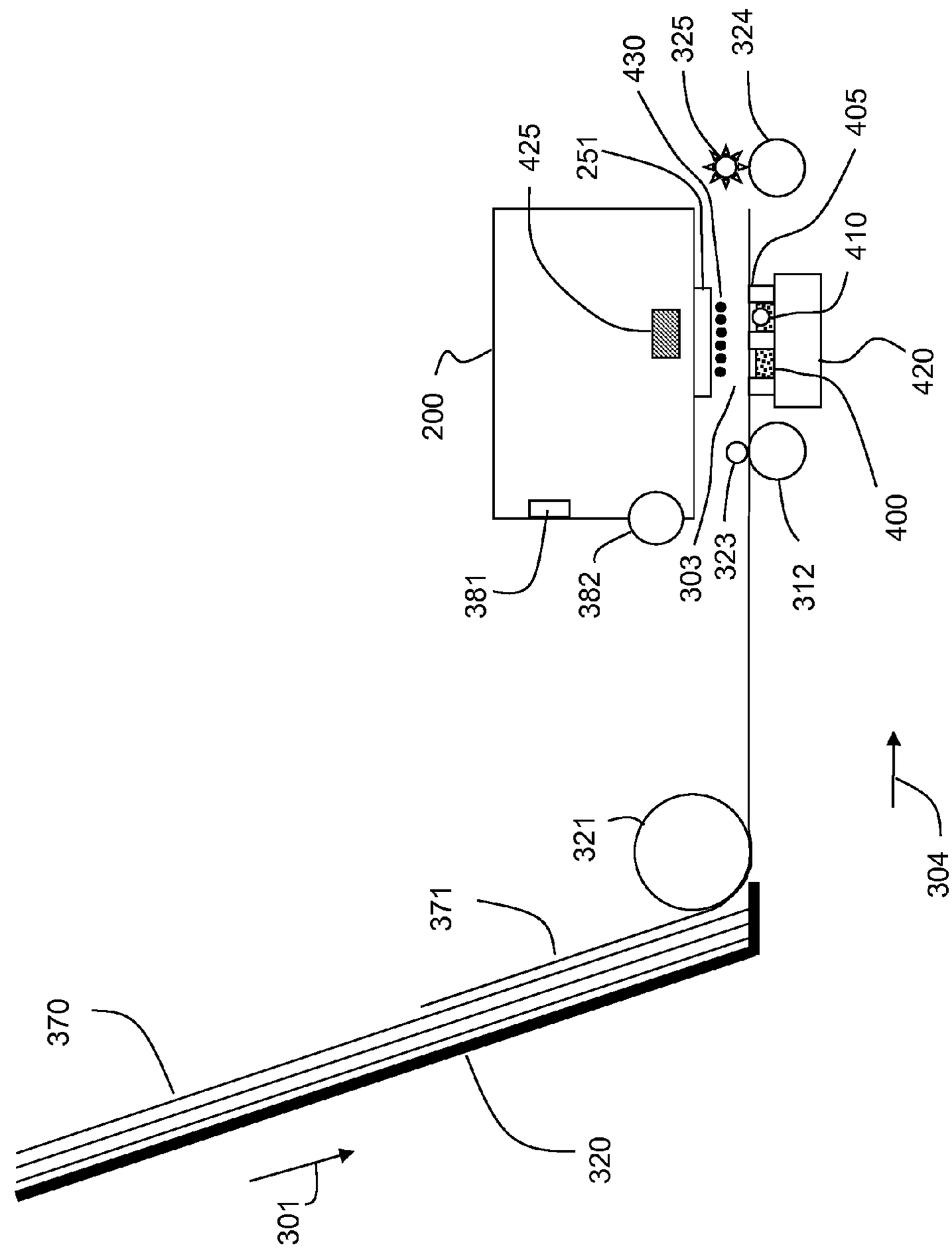
301
320
381
262
264
410
250
200
382
312
314
307
305
304
300

FIG. 3


425
251
430
325
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381
382
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301
304

FIG. 4

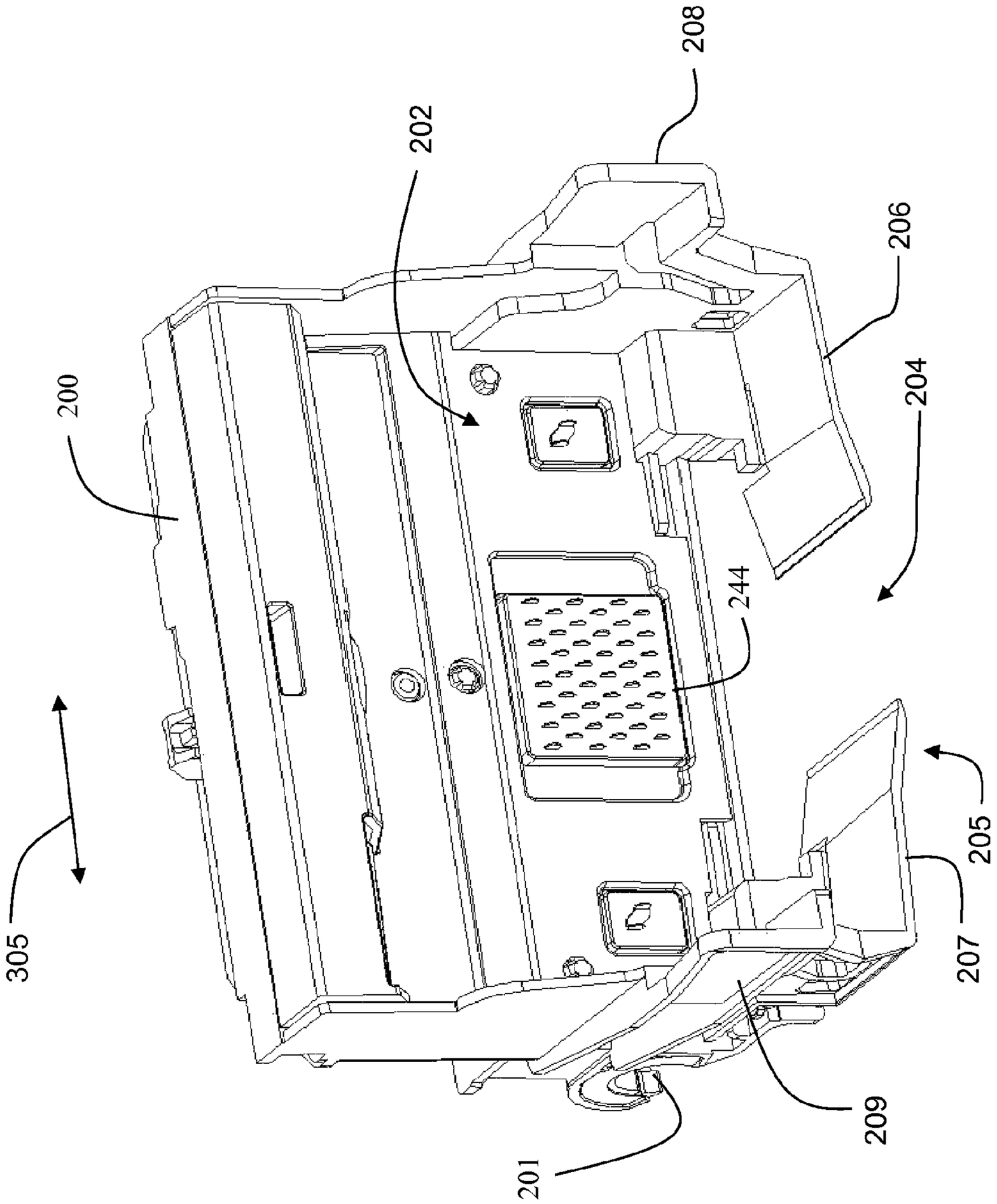

FIG. 5

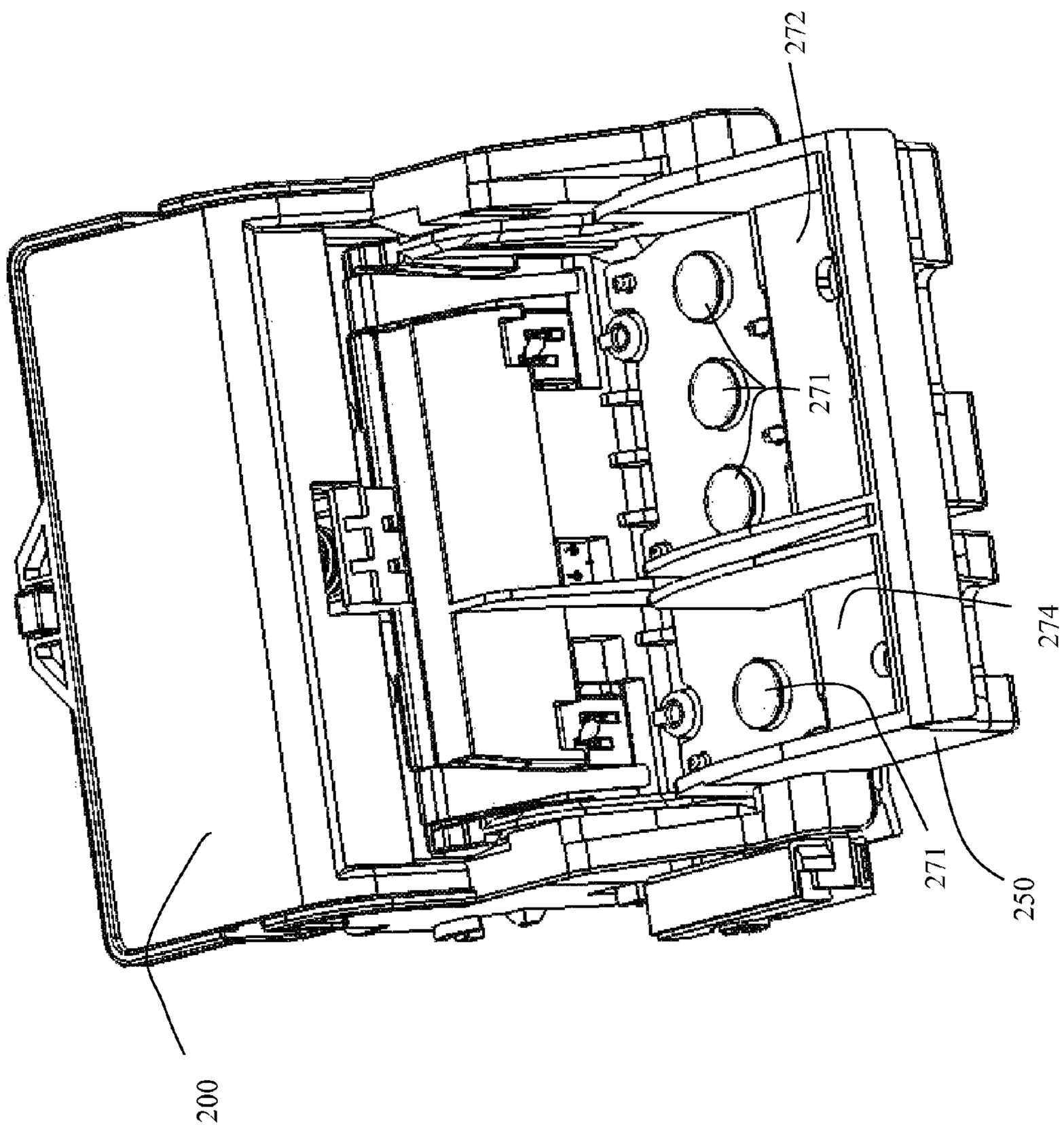

FIG. 6

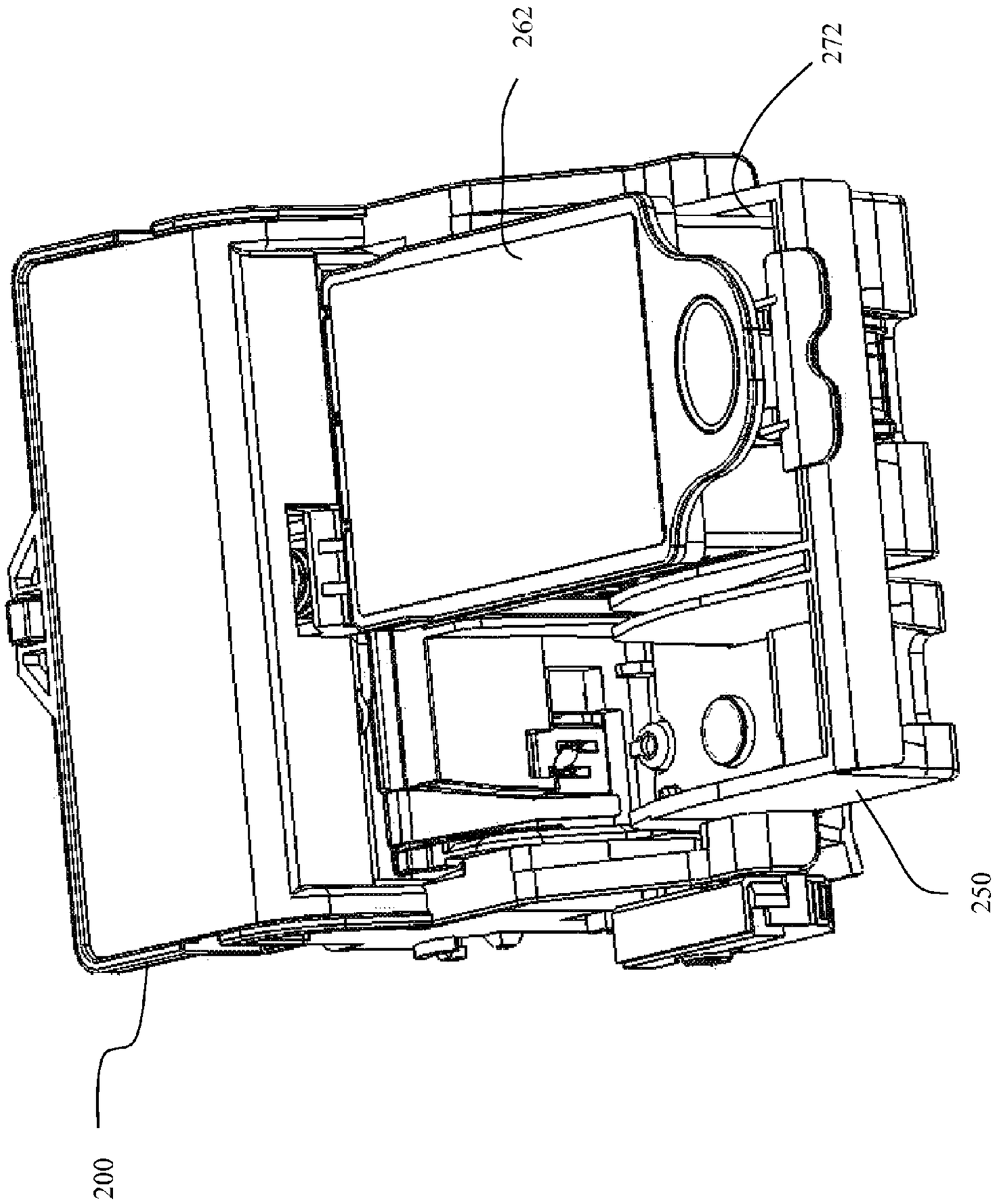

FIG. 7

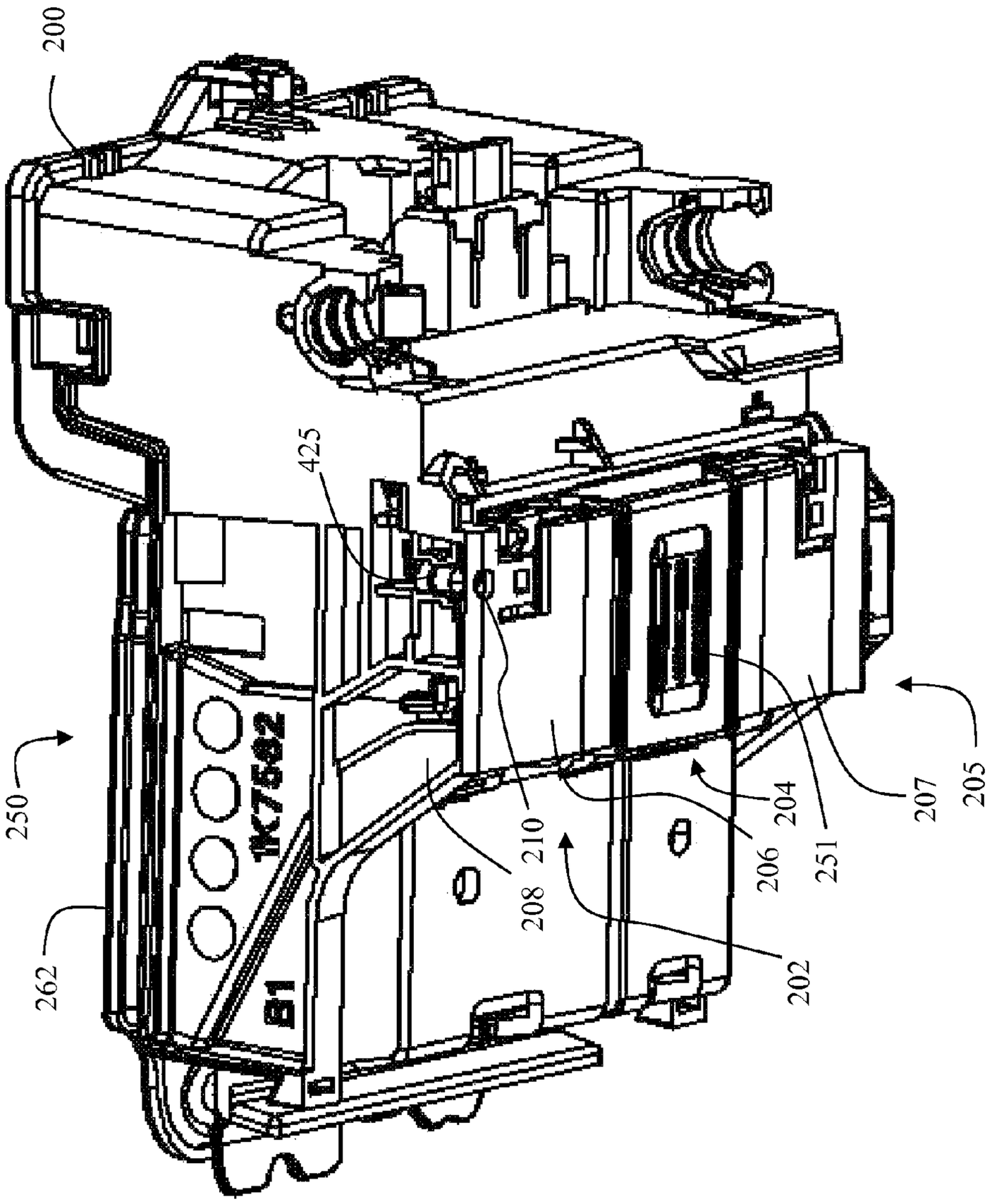

FIG. 8

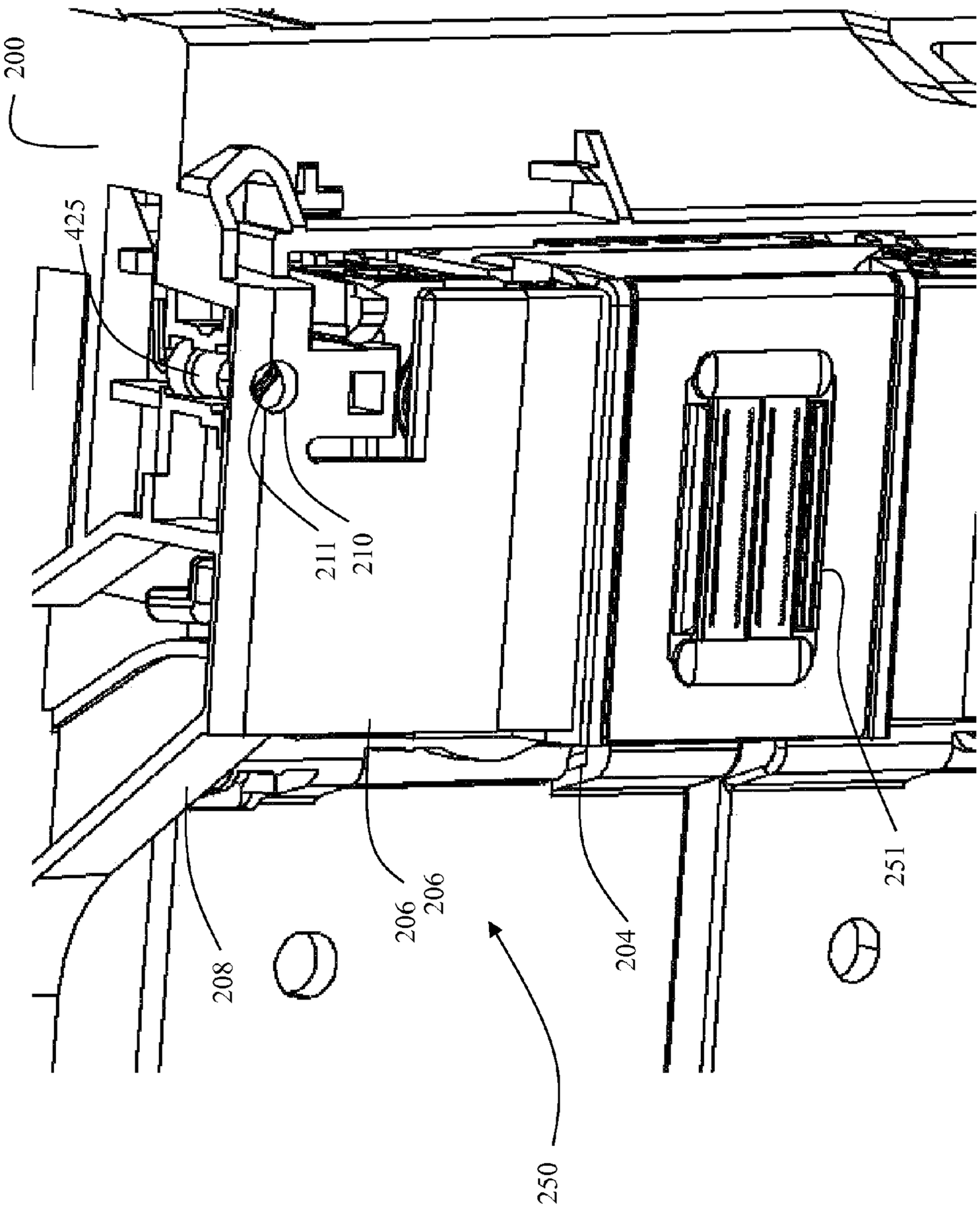

FIG. 9

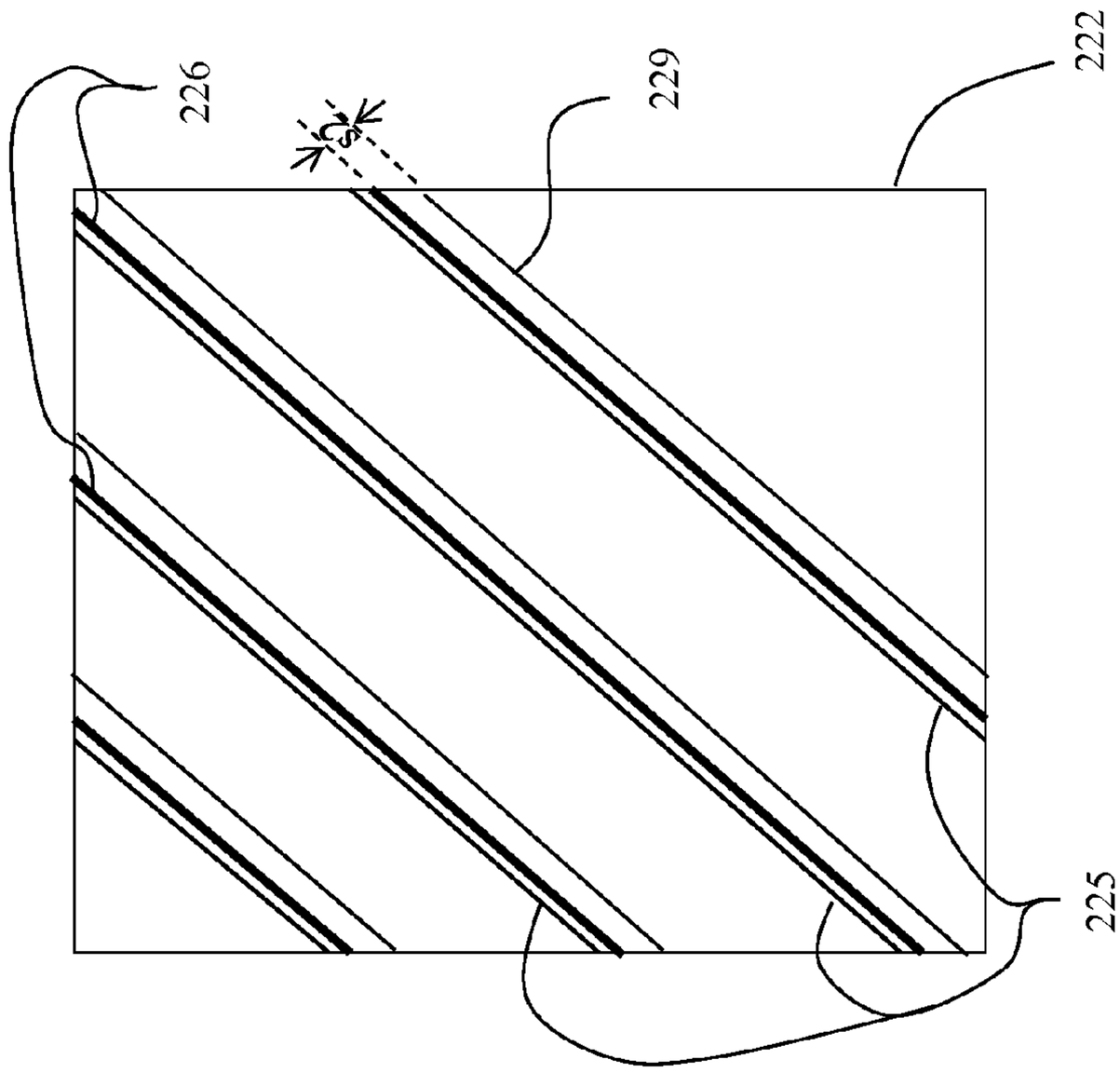

FIG. 10B

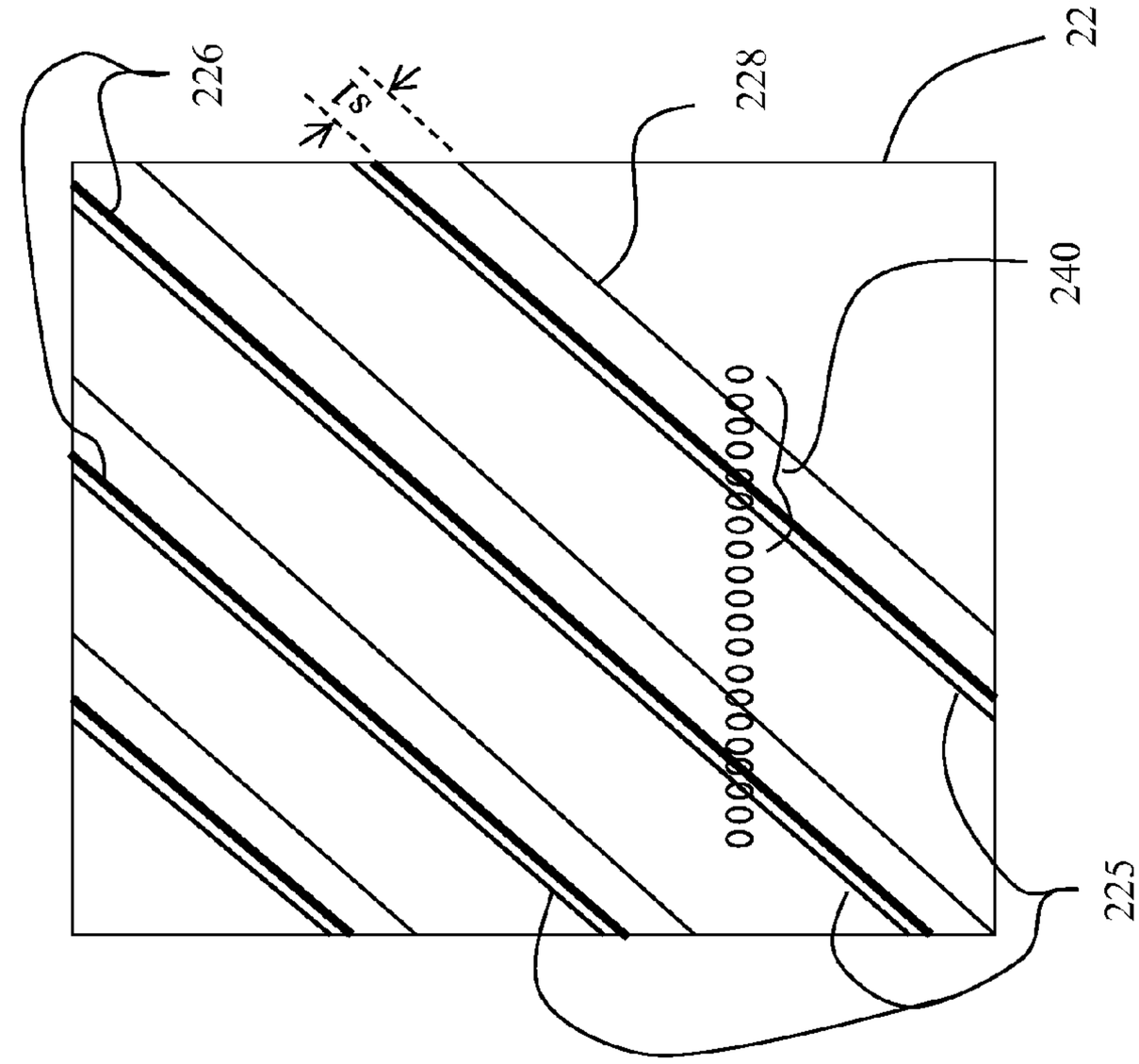

FIG. 10A

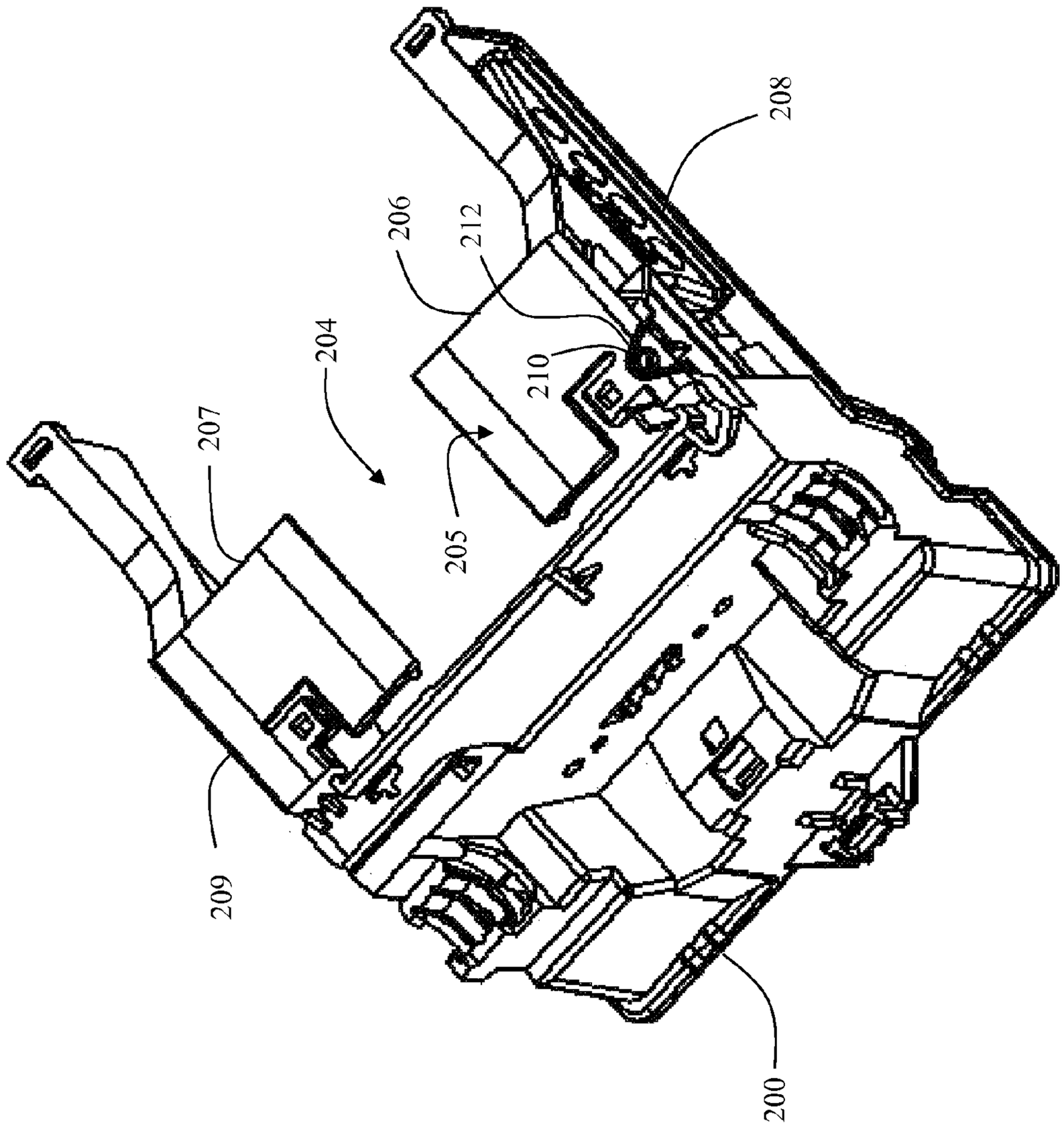

FIG. 11

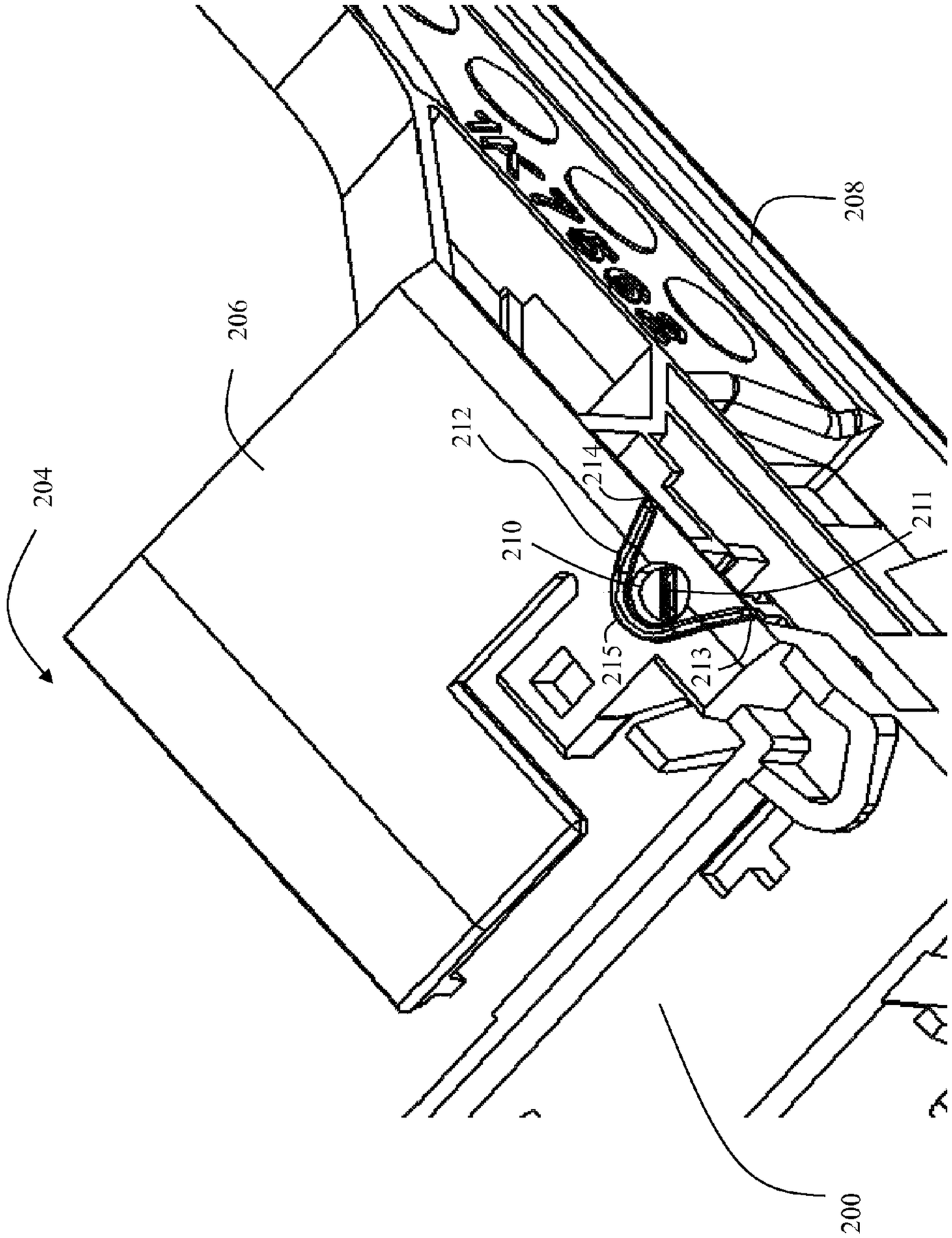

FIG. 12

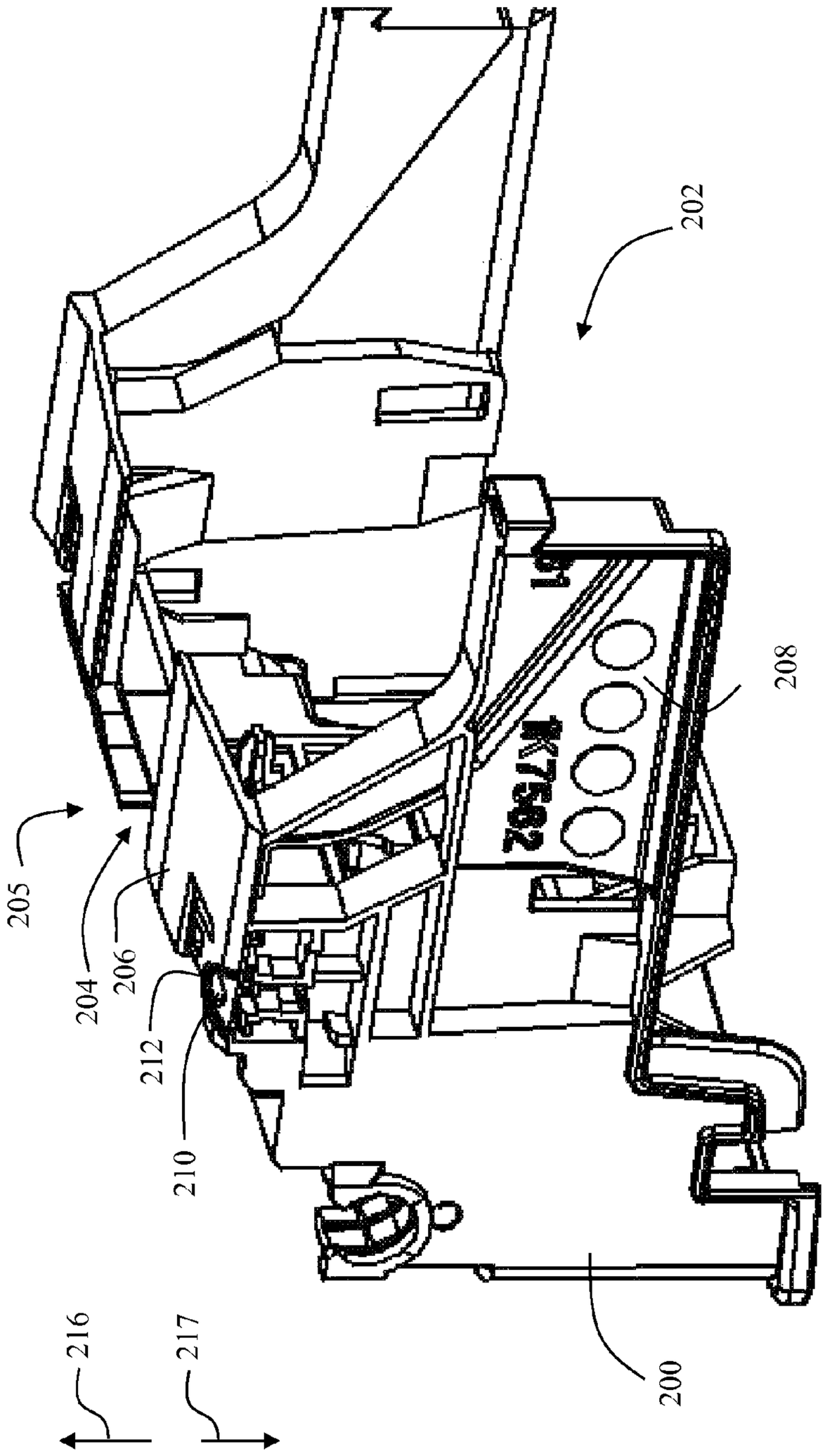

FIG. 13

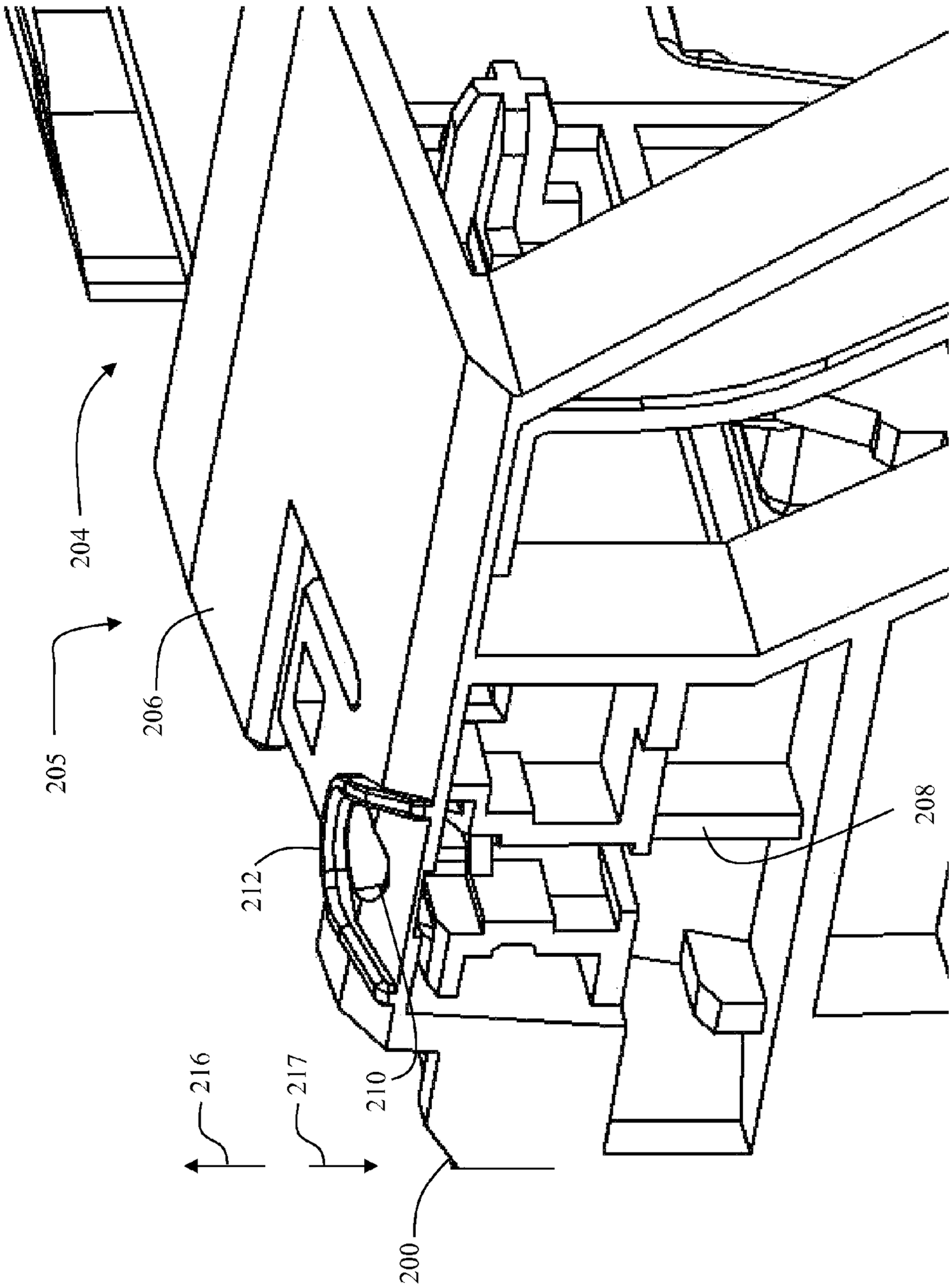

FIG. 14

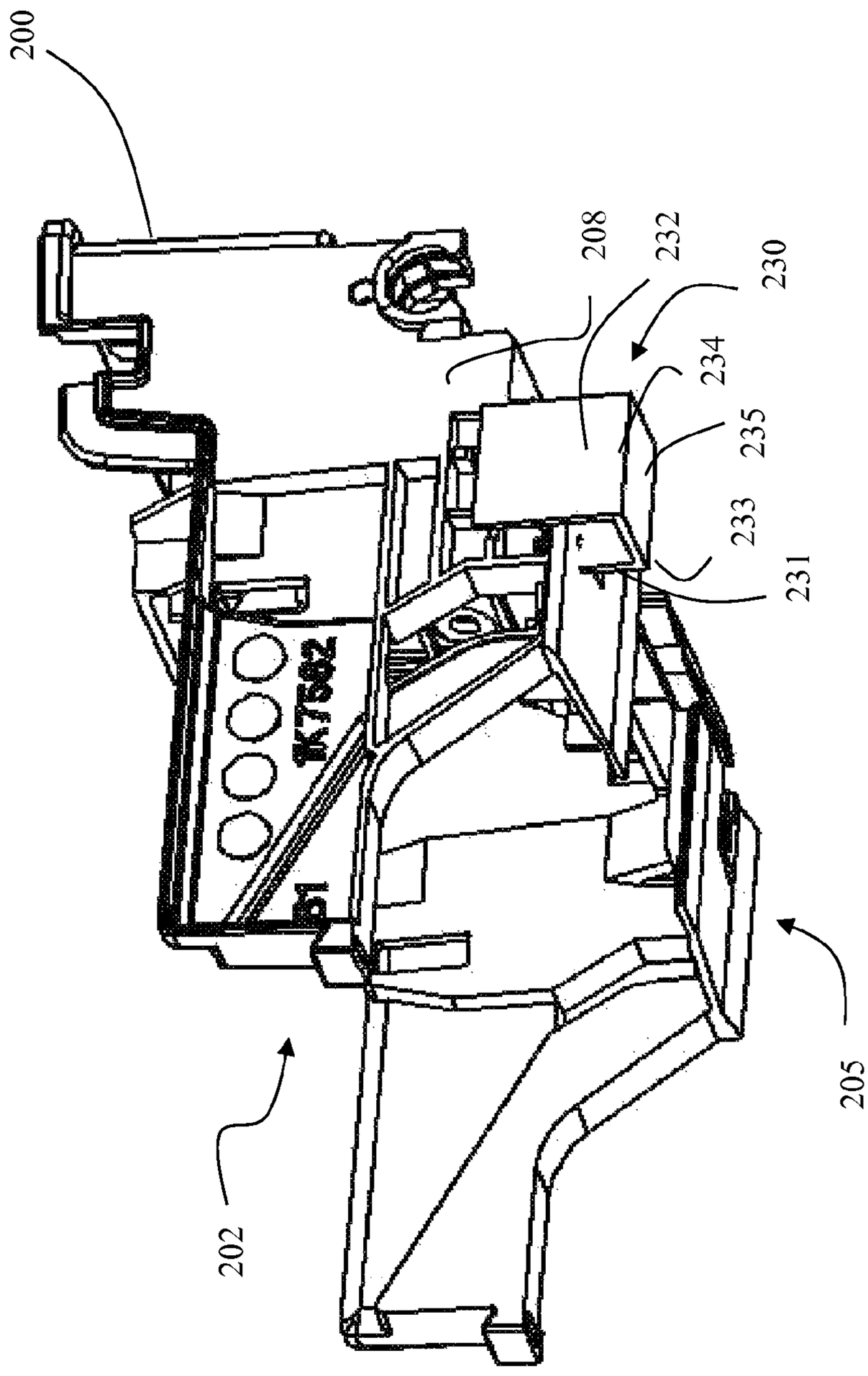

FIG. 15

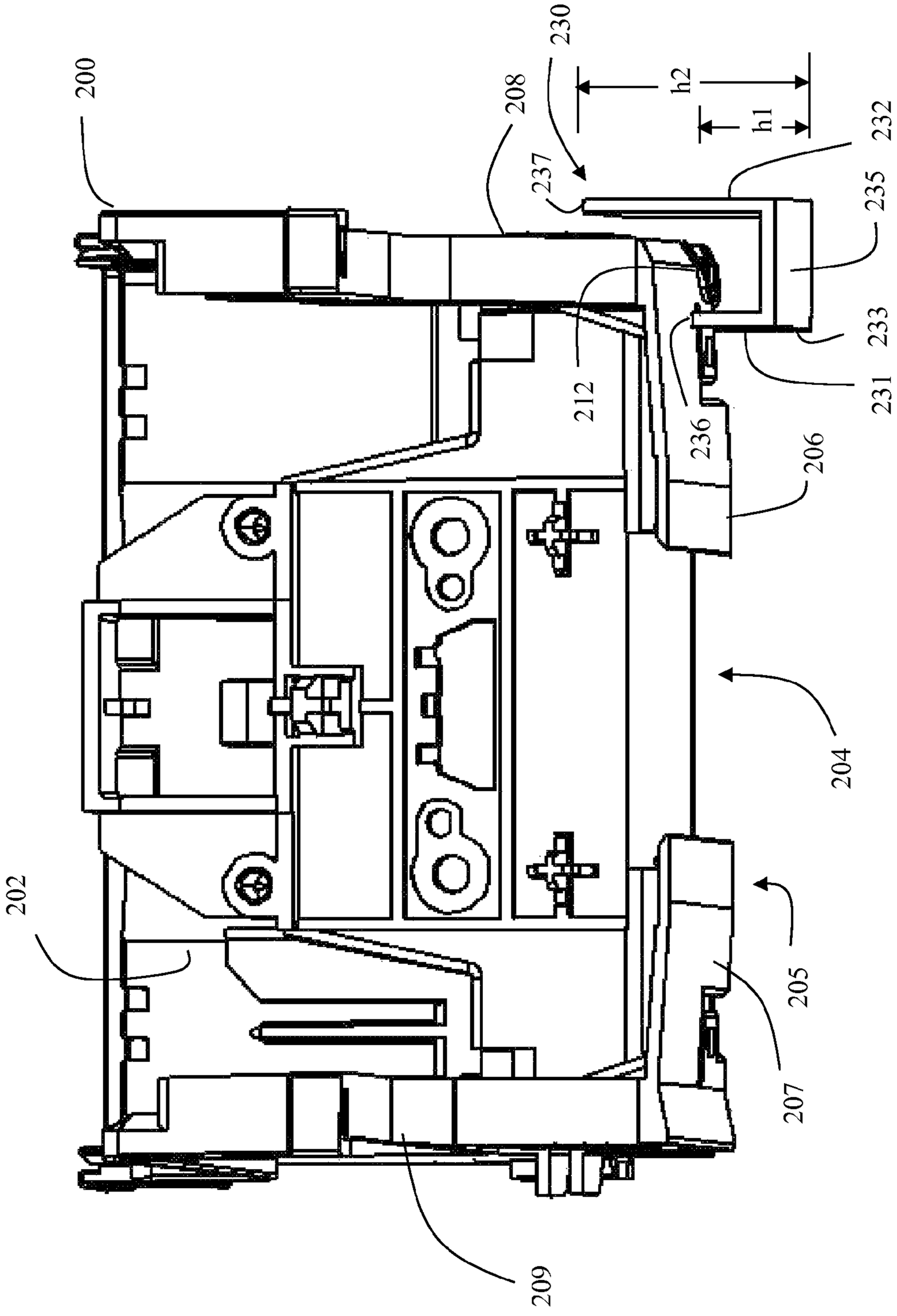
200
230
208
h2
h1
232
237
235
233
231
212
236
206
204
202
205
207
209

FIG. 16

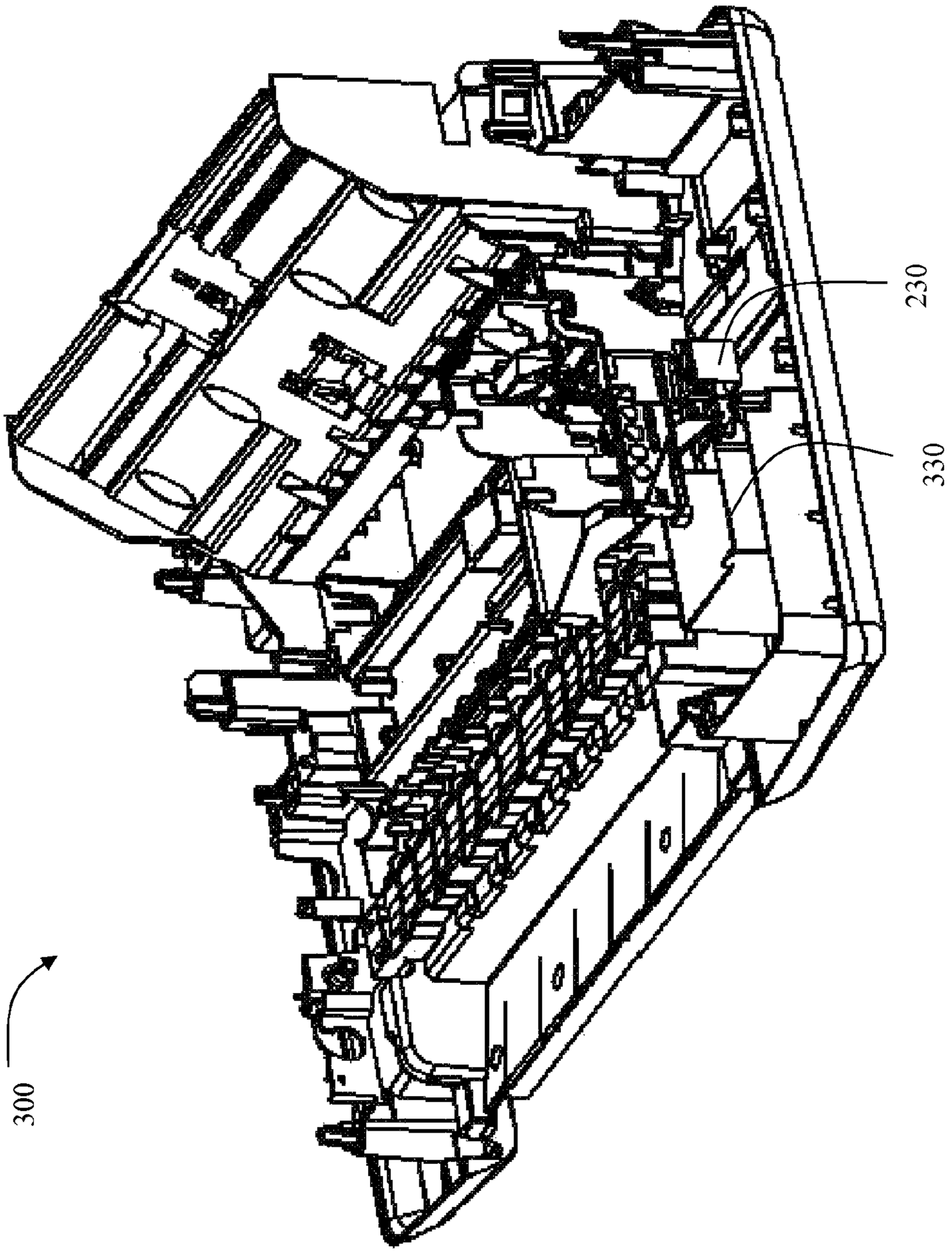

FIG. 17

WICKING ACCUMULATED INK AWAY FROM OPTICAL SENSOR IN INKJET PRINTER

CROSS REFERENCE TO RELATED APPLICATION

Reference is made to commonly assigned U.S. patent application Ser. No. 13/669,493 filed Nov. 6, 2012 by Tay Swee Hwai, Kat Huat Kuu and Han Tian Phua, entitled "Ink Barrier for Optical Sensor in Inkjet Printer."

FIELD OF THE INVENTION

The present invention generally relates to digital printing and more particularly to improving long term reliability of an apparatus used for detecting the type of print media being used in the printer.

BACKGROUND OF THE INVENTION

In a carriage printer, such as an inkjet carriage printer, a printhead is mounted in a carriage that is moved back and forth across a region of printing. To print an image on a sheet of paper or other print medium, the print medium is advanced a given nominal distance along a media advance direction and then stopped. Media advance is typically done by a roller and the nominal distance is typically monitored indirectly by a rotary encoder. While the print medium is stopped and supported on a platen, the printhead carriage is moved in a direction that is substantially perpendicular to the media advance direction as marks are controllably made by marking elements on the print medium—for example by ejecting drops from an inkjet printhead. The position of the carriage and the printhead relative to the print medium is precisely monitored directly, typically using a linear encoder. After the carriage has printed a swath of the image while traversing the print medium, the print medium is advanced; the carriage direction of motion is reversed; and the image is formed swath by swath.

In order to produce high quality images, it is helpful to provide information to printer controller electronics regarding the printing side of the recording medium, which can include whether it is a glossy or matte-finish paper. Such information can be used to select a print mode that will provide an optimal amount of ink in an optimal number of printing passes in order to provide a high quality image on the identified media type. It is well-known to provide identifying marks or indicia, such as a bar code, on a non-printing side of the recording medium to distinguish different types of recording media. It is also well known to use a sensor in the printer to scan the indicia and thereby identify the recording medium and provide that information to the printer control electronics. U.S. Pat. No. 7,120,272, for example includes a sensor that makes sequential spatial measurements of a moving media that contains repeated indicia to determine a repeat frequency and repeat distance of the indicia. The repeat distance is then compared against known values to determine the type of media present.

U.S. Pat. No. 8,033,628 discloses the use of a backside media sensor to read a manufacturer's code for identifying the media type. In this approach light from a light source is reflected from the backside of the media and received in a photosensor while the print media is being advanced past the photosensor. A source of unreliability in interpreting the signals is that media can slip during its advance past the photosensor.

Identification of media type by using transmitted light to detect a manufacturer's code, such as a bar code, has been disclosed in U.S. Pat. No. 8,282,183. In this approach, an optical sensor is provided on the carriage and a light source is provided on an opposite side of the media path so that the optical sensor on the carriage detects light transmitted through the print medium. This approach works well, and is especially useful in so-called L-path printers, where the print side of the print medium faces outward in the media input tray. However, it is found that if a viewing hole for the optical sensor is provided at the bottom of the carriage, accumulated ink at the bottom of the carriage can obstruct the viewing hole in some conditions after long-term usage of the printer.

Consequently, a need exists for a way to keep the optical path to a carriage-mounted sensor unobstructed by ink accumulation.

SUMMARY OF THE INVENTION

The present invention is directed to overcoming one or more of the problems set forth above. Briefly summarized, according to one aspect of the invention, the invention resides in an inkjet printer comprising: an inkjet printhead including a printhead die having an array of nozzles; a media advance system for moving recording medium along a media path toward a print region; a carriage for moving the inkjet printhead back and forth across the print region, wherein the carriage includes: a holding receptacle for the inkjet printhead, the holding receptacle including a bottom portion having an opening into which the printhead die extends; an optical sensor; and a viewing hole in the bottom portion of the holding receptacle, the viewing hole providing an optical pathway between the optical sensor and a portion of the media path; and a wick configured to contact the bottom portion of the holding receptacle proximate the viewing hole for removing accumulated ink.

BRIEF DESCRIPTION OF THE DRAWINGS

The above and other objects, features, and advantages of the present invention will become more apparent when taken in conjunction with the following description and drawings wherein identical reference numerals have been used, where possible, to designate identical features that are common to the figures, and wherein:

FIG. **1** is schematic representation of an inkjet printer system;

FIG. **2** is a perspective of a printhead;

FIG. **3** is a perspective of an L-path carriage printer;

FIG. **4** is a block diagram illustrating the flow of the print media through the printing process of the L-shaped paper path;

FIG. **5** is a perspective of a holding receptacle portion of a carriage of the printer;

FIG. **6** is a perspective of a printhead mounted onto the carriage of FIG. **5**;

FIG. **7** is a perspective of an ink tank loaded into the printhead of FIG. **6**;

FIG. **8** is a bottom perspective of the carriage and printhead;

FIG. **9** is an enlarged view of a portion of FIG. **8**;

FIGS. **10**A and **10**B illustrate two different types of print media with correspondingly different bar codes;

FIG. **11** is a bottom perspective of carriage including a barrier around a viewing hole, according to an embodiment of the invention;

FIG. **12** is an enlarged view of a portion of FIG. **11**;

FIG. **13** is a side perspective of the carriage and barrier of FIG. **11**;

FIG. **14** is an enlarged view of a portion of FIG. **13**;

FIG. **15** is a side perspective of a wick in contact with a bottom portion of the carriage according to an embodiment of the invention;

FIG. **16** is a front perspective of the wick and carriage of FIG. **15**; and

FIG. **17** is a perspective of the wick mounted near the maintenance station in a printer chassis.

DETAILED DESCRIPTION OF THE INVENTION

Referring to FIG. **1**, a schematic representation of an inkjet printer system **10** is shown, for its usefulness with the present invention and is fully described in U.S. Pat. No. 7,350,902, and is incorporated by reference herein in its entirety. The inkjet printer system **10** includes an image data source **12**, which provides data signals that are interpreted by a controller **14** as being commands to eject drops. The controller **14** includes an image processing unit **15** for rendering images for printing, and outputs signals to an electrical pulse source **16** of electrical energy pulses that are inputted to an inkjet printhead **100**, which includes at least one inkjet printhead die **110**. The controller **14** also includes identification processing for comparing an identified type of media to stored media types in memory **21**, as will be discussed in detail hereinbelow.

In the example shown in FIG. **1**, there are two nozzle arrays **120** and **130**. Nozzles **121** in the first nozzle array **120** have a larger opening area than nozzles **131** in the second nozzle array **130**. In this example, each of the two nozzle arrays **120**, **130** has two staggered rows of nozzles **121**, **131**, each row having a nozzle density of 600 per inch. The effective nozzle density then in each nozzle array **120**, **130** is 1200 per inch (i.e. d=1/1200 inch in FIG. **1**). If pixels on a recording medium **20** were sequentially numbered along the paper advance direction, the nozzles **121** or **131** from one row of the nozzle array **120**, **130** would print the odd numbered pixels, while the nozzles **121** or **131** from the other row of the nozzle array **120**, **130** would print the even numbered pixels.

In fluid communication with each nozzle array **120** and **130** is a corresponding ink delivery pathway **122** and **132**. The ink delivery pathway **122** is in fluid communication with the first nozzle array **120**, and the ink delivery pathway **132** is in fluid communication with the second nozzle array **130**. Portions of the ink delivery pathways **122** and **132** are shown in FIG. **1** as openings through a printhead die substrate **111**. One or more inkjet printhead die **110** will be included in the inkjet printhead **100**, but for greater clarity only one inkjet printhead die **110** is shown in FIG. **1**. The inkjet printhead die **110** are arranged on a mounting support member as discussed below relative to FIG. **2**. In FIG. **1**, a first fluid source **18** supplies ink to the first nozzle array **120** via the ink delivery pathway **122**, and a second fluid source **19** supplies ink to the second nozzle array **130** via the ink delivery pathway **132**. Although distinct fluid sources **18** and **19** are shown, in some applications it can be beneficial to have a single fluid source supplying ink to both the first nozzle array **120** and the second nozzle array **130** via ink delivery pathways **122** and **132**, respectively. Also, in some embodiments, fewer than two or more than two nozzle arrays **120** and **130** can be included on the inkjet printhead die **110**. In some embodiments, all nozzles **121** and **131** on inkjet printhead die **110** can be the same size, rather than having multiple sized nozzles on the inkjet printhead die **110**.

The drop forming mechanisms associated with the nozzles **121** and **131** are not shown in FIG. **1**. Drop forming mechanisms can be of a variety of types, some of which include a heating element to vaporize a portion of ink and thereby cause ejection of a droplet, or a piezoelectric transducer to constrict the volume of a fluid chamber and thereby cause ejection, or an actuator which is made to move (for example, by heating a bi-layer element) and thereby cause ejection. In any case, electrical pulses from the electrical pulse source **16** are sent to the various drop ejectors according to the desired deposition pattern. In the example of FIG. **1**, droplets **181** ejected from the first nozzle array **120** are larger than droplets **182** ejected from the second nozzle array **130** due to the larger nozzle opening area. Typically other aspects of the drop forming mechanisms (not shown) associated respectively with the nozzle arrays **120** and **130** are also sized differently in order to optimize the drop ejection process for the different sized drops. During operation, droplets of ink are deposited on the recording medium **20** (also sometimes called paper, print medium or medium herein).

FIG. **2** shows a perspective of a portion of a printhead **250**, which is an example of the inkjet printhead **100**. The printhead **250** includes two printhead die **251** (similar to inkjet printhead die **110** of FIG. **2**) that are affixed to a common mounting support member **255**. Each printhead die **251** contains two nozzle arrays **253**, so that printhead **250** contains four nozzle arrays **253** altogether. The four nozzle arrays **253** in this example can each be connected to separate ink sources. Each of the four nozzle arrays **253** is disposed along a nozzle array direction **254**, and the length of each nozzle array **253** along the nozzle array direction **254** is typically on the order of 1 inch or less. Typical lengths of recording media are 6 inches for photographic prints (4 inches by 6 inches) or 11 inches for paper (8.5 by 11 inches). Thus, in order to print a full image, a number of swaths are successively printed while moving the printhead **250** across the recording medium **20**. Following the printing of a swath, the recording medium **20** is advanced along a media advance direction **304** that is substantially parallel to the nozzle array direction **254**.

Also shown in FIG. **2** is a flex circuit **257** to which the printhead die **251** are electrically interconnected, for example, by wire bonding or TAB bonding. The interconnections are covered by an encapsulant **256** to protect them. The flex circuit **257** bends around a side of the printhead **250** and connects to a connector board **258**. When the printhead **250** is mounted into a carriage **200** (see FIG. **5**), the connector board **258** is electrically connected to a connector **244** on the carriage **200** so that electrical signals can be transmitted to the printhead die **251**.

FIG. **3** shows a perspective of portion of a desktop carriage printer and FIG. **4** shows a schematic side view. Some of the parts of the printer have been hidden in the view shown in FIG. **3** so that other parts can be more clearly seen. A printer chassis **300** includes a horizontal base **302**. The carriage **200** is moved back and forth in carriage scan direction **305**, between a right side **306** and a left side **307** of the printer chassis **300**, while ink drops **430** are ejected from the printhead die **251** on the printhead **250** that is mounted on the carriage **200**. The carriage **200** plus the printhead **250** and other components mounted on the carriage **200** is sometimes called a carriage assembly herein. A carriage motor (not shown) moves the carriage **200** along a carriage guide rail **382**. An encoder sensor **381** is mounted on the carriage **200** and indicates location of the carriage **200** relative to a linear encoder (not shown). In other words, during times when the carriage **200** is moving in the carriage scan direction **305** and the recording medium **20** (see FIG. **1**) is not moving, the relative position of the carriage **200** and the recording medium **20** is directly monitored. Likewise, the position of components affixed to the carriage **200** (including an optical

sensor **425** described below) relative to the recording medium **20** are also directly monitored by use of the encoder sensor **381**.

The printhead **250** is mounted in the carriage **200**, and a multi-chamber ink supply **262** and a single-chamber ink supply **264** are mounted in the printhead **250**. The mounting orientation of the printhead **250** is rotated relative to the view in FIG. **2** so that the printhead die **251** are located at the bottom side of printhead **250**; the droplets of ink are ejected downward in the view of FIGS. **3** and **4**. The multi-chamber ink supply **262**, for example, contains three ink sources: e.g. cyan, magenta, and yellow ink; while the single-chamber ink supply **264** contains black ink. Toward the right side **306** of the printer chassis **300**, in the example of FIG. **3**, is a maintenance station **330**.

In the L-shaped paper path shown in FIGS. **3** and **4**, the recording medium **20** is loaded along a paper load entry direction **301** nearly vertically at an angle of sixty degrees or more relative to the horizontal base **302** against a media input support **320** at a rear **309** of the printer chassis **300**. Several rollers are used to advance the recording medium **20** through the printer. A pick roller **321** on a pick arm assembly **352** is rotated to move a first piece or sheet **371** of a stack **370** of paper or other types of recording medium **20** in the media input support **320** from the paper load entry direction **301** to the media advance direction **304**. The paper is then moved by a feed roller **312** and idler roller(s) **323** to advance toward the print region **303** (disposed along the carriage scan direction **305**). The feed roller **312** is driven directly by a paper advance motor (not shown) that is connected by belt or gear engagement, for example at a drive gear **314**. After the image is printed at the print region **303**, the sheet **371** of the stack **370** is further advanced to a discharge roller **324** and star wheel(s) **325**.

The print region **303** is defined as the region along the pathway of the carriage **200** as it moves the printhead **250** in its carriage scan direction **305**. In many printers, particularly those that are configured to print borderless prints of photographic images, for example, a absorbent material **400** (FIG. **4**) spans a predetermined length of the printer chassis **300**. The absorbent material **400** functions as a collector for absorbing superfluous ink mist or oversprayed ink present in the print region **303**. A media support, which can include support ribs or pins **405**, protrudes through the absorbent material **400** for providing a surface on which the paper rests during printing and during scanning of the paper type. As defined herein, "media support" is defined as a support mechanism which functions primarily or entirely to support a print medium, such as paper and the like, during a stage of printing. The pins **405** are preferably disposed in a plurality of rows at predetermined locations relative to standard widths of print media, so that during borderless printing, ink that is oversprayed beyond the edges of the print medium lands primarily on the absorbent material **400**, rather than on the pins **405**.

FIG. **5** is a perspective of the carriage **200**. The carriage **200** includes a holding receptacle **202** for an inkjet printhead **250** (see FIGS. **2**, **6-7**). The holding receptacle **202** includes a first side wall **208** and a second side wall **209** opposite the first side wall **208**. The first side wall **208** and the second side wall **209** extend from a bottom portion **205** of the holding receptacle **202**. The bottom portion **205** includes an opening **204** into which the printhead die **251** extend when the printhead **250** is mounted onto the carriage **200** (FIG. **8**). In the example shown in FIG. **5**, the bottom portion **205** includes a first flap **206** extending between the first side wall **208** and the opening **204**, and a second flap **207** extending between the second side wall **209** and the opening **204**. The carriage **200** includes one or more bushings **201** to glide along the carriage guide rode **382** (FIG. **3**) in the carriage scan direction **305**. The carriage **200** also includes a connector **244** to mate with the connector board **258** of the printhead **250** (FIG. **2**).

FIGS. **6** and **7** are perspectives of the printhead **250** mounted in the carriage **200**. The printhead **250** includes a compartment **272** for the multi-chamber ink supply **262** (FIG. **3**) and a compartment **274** for the single chamber ink supply **264**. Ink ports **271** receive ink from the ink supplies **262** and **264** and provide the ink to the printhead die **251** of the printhead **250**. FIG. **7** shows a perspective of the multi-chamber ink supply **262** loaded into the compartment **272** of the printhead **250**.

FIG. **8** is a bottom perspective of the carriage **200** and the printhead **250** with the printhead die **251** extending into the opening **204**, and FIG. **9** is an enlarged view of a portion of this region. The optical sensor **425** is mounted near the first side wall **208**. A viewing hole **210** in the bottom portion **205** of the holding receptacle **202** provides an optical pathway for the optical sensor **425**. In particular, the viewing hole **210** is disposed in the first flap **206**. In the enlarged view of FIG. **9** it can be seen that the viewing hole **210** includes a narrow aperture slot **211** that blocks stray light from entering the optical sensor **425**, thereby improving its signal to noise ratio.

Referring to FIG. **4**, a platen **420** forms a foundation in which the absorbent material **400** is disposed. One or more light sources **410** are disposed proximate the absorbent material **400** for illuminating the sheet **371** as it passes below the carriage **200**. When the sheet **371** is below the carriage **200**, the light passes through the sheet **371**, through the slot **211** and the viewing hole **210** (FIGS. **8-9**) and into the optical sensor **425**, which is attached to the carriage **200**, for sensing the light transmitted through the sheet **371**. In other words, the viewing hole **210** and the slot **211** provide an optical pathway between the optical sensor **425** and a portion of the media path. The one or more light sources **410** are disposed on a first side of the portion of the media path (below sheet **371** in FIG. **4**) and the carriage **200** and the optical sensor **425** are disposed on a second side of the portion of the media path (above sheet **371** in FIG. **4**) opposite the first side. A media identification code, such as a bar code or the like, is provided on the non-print side of the sheet **371** (the surface facing the light source **410**) so that the sheet **371** can be identified via the transmitted light which is sensed by the optical sensor **425**. During printing, the carriage **200** traverses back and forth across the print region **303** via the carriage guide rail **382** to position the printhead die **251** to eject ink drops **430** for printing onto the printing surface (surface facing the carriage **200**) of the sheet **371** at precise locations determined by the image data and the position of the carriage **200** determined from the signals from encoder sensor **381** (see FIG. **3**). During a prior step of media identification, the carriage **200** is guided by the carriage guide rail **382** to permit the optical sensor **425** to sense the transmitted light including the bar code pattern, while the relative position of the optical sensor **425** (being mounted on the carriage **200**), is directly monitored by the encoder sensor **381**, as described above relative to FIG. **3**. In this manner, the printer is able to identify the particular type of media being used so that it can make any adjustments suitable for that particular media prior to printing.

FIGS. **10**A and **10**B show schematic representation of markings on the backside of a first media type **221** of recording medium and a second media type **222** of recording medium respectively. In this embodiment, each of the various types of recording media has a reference marking consisting of a pair of "anchor bars" **225** and **226** which are located at a

fixed distance with respect to one another for all media types. In addition, there is a first identification mark **228** on the first media type **221** in FIG. **10**A, and there is a second identification mark **229** on the second media type **222** in FIG. **10**B. In this example, the first identification mark **228** is spaced a distance s**1** away from the anchor bar **226** on first media type **221**, and the second identification mark **229** is spaced a distance s**2** away from anchor bar **226** on the second media type **222**, such that s**1** does not equal s**2**. Thus in this example, it is the spacing of the identification mark from one of the anchor bars **225** and **226** that identifies the particular type of recording medium.

Ovals in FIG. **10**A schematically represent successive fields of view **240** of the optical sensor **425** as the carriage **200** is scanned relative to the first media type **221** along the carriage scan direction **305**. Because the field of view **240** of the optical sensor **425** moves along the carriage scan direction **305** as the carriage **200** moves, it is actually the projections of marking spacings s**1** and s**2** along the carriage scan direction **305** that are measured. Optical sensor data is sampled much more frequently than the fields of view **240** in FIG. **10**A show, but only a few samples are shown for clarity. In addition, the actual field of view **240** can be a different size or shape than the ovals shown in FIG. **10**A, as determined, for example by aperture shape (such as slot **211**), the angle of the aperture plane relative to the plane of the recording medium, optical elements such as lenses, and optical path lengths.

The output signal of the optical sensor **425** can be amplified and filtered to reduce background noise and then digitized in an analog to digital converter. Once the amplified signal has been digitized, digital signal processing can be used to further enhance the signal relative to high frequency background noise. In addition, the time-varying signal can be converted into spatial distances to find peak widths or distances between peaks corresponding to the code pattern markings. Processed signal patterns are sent to a processor (for example a processor in the controller **14** of FIG. **1**) and analyzed by comparing to signal patterns stored in memory **21** (see FIG. **1**) to indicate media type.

In the examples shown in FIGS. **10**A and **10**B, the bar codes extend across the recording medium and are repeated a plurality of times on the recording medium. This configuration can be advantageous for the manufacturer of the recording medium in that recording media is typically manufactured in large rolls that are subsequently cut to size. If the bar code extends as in FIGS. **10**A and **10**B it can be applied while the recording medium is still in the large roll format, and cut to whatever size is required. Smaller bar codes that are positioned with respect to a particular edge or corner of the recording medium are not as easily provided.

A problem that can occur in the carriage configuration shown in FIGS. **8** and **9** is that after long-term usage of the printhead **250**, ink can accumulate on the bottom portion **205** of the holding receptacle **202** and flow across the first flap **206** into the viewing hole **210** and obstruct the optical pathway between optical sensor **425** and sheet **371** (FIG. **4**) of recording medium. If the viewing hole **210** includes a small aperture, such as narrow slot **211** (FIG. **9**), a relatively small amount of accumulated ink can decrease the signal from the optical sensor **425**, thereby impacting the reliability of media type detection.

A first way of improving the long-term reliability of media type detection, according to embodiments shown in FIGS. **11-14** is provided by forming a barrier **212** that projects from the bottom portion **205** of the holding receptacle **202** between the opening **204** and the viewing hole **210** for impeding the flow of ink toward viewing hole **210** and aperture slot **211**. FIG. **11** is a bottom perspective of the carriage **200** including the barrier **212**, and FIG. **12** is an enlarged view of a portion of FIG. **11**. FIG. **13** is a side perspective of the carriage **200** including the barrier **212**, and FIG. **14** is an enlarged view of a portion of FIG. **13**. In the example shown in FIGS. **11-14**, the barrier **212** is curved such that it has a first end **213** at first side wall **208**, a second end **214** at the first side wall **208** and an intermediate portion **215** that is closer to the opening **204** than the first end **213** or the second end **214** (see FIG. **12**). In other words, the barrier **212** is open at the first side wall **208**. As shown in FIGS. **13** and **14**, the barrier **212** projects from the bottom portion **205** of the holding receptacle **202** in a first direction **216**, and first side wall **208** extends from bottom portion **205** in a second direction **217** opposite the first direction **216**. The barrier **212** and the viewing hole **210** can be formed by injection molding at the same time the carriage **200** is injection molded.

A second way of improving the long-term reliability of media type detection, according to an embodiment shown in FIGS. **15-17** is provided by a wick **230** that is configured to contact the bottom portion **205** of the holding receptacle **202** near the viewing hole **210** for removing accumulated ink. FIG. **15** shows a side perspective and FIG. **16** shows a front perspective of the wick **230** in contact with the bottom portion **205** near the first side wall **208**. In FIG. **17**, the wick **230** is mounted near the maintenance station **330** (see also FIG. **3**) in the printer chassis **300**.

In the embodiment shown in FIGS. **15-17**, the wick **230** is formed from a flexible sheet of capillary medium such as felt or foam. The wick **230** has a first fold **233** and a second fold **234**. The first fold **233** is located between a base **235** of the wick **230** and a first leg **231** of the wick **230**. The base **235** is substantially parallel to the bottom portion **205** of the holding receptacle **202** of the carriage **200**. The first leg **231** has a first end **236** disposed at a first height h**1** above the base **235**. The bottom portion **205** of the holding receptacle **202** of the carriage **200** is located a distance above the base **235** that is less than or equal to first height h**1**, so that when the carriage **200** is moved to a position near the maintenance station **330**, the first end **236** of the first leg **231** of the wick **230** contacts and wipes the bottom portion **205** of the holding receptacle **202** to remove accumulated ink near viewing hole **210** (FIG. **12**). The position of the first leg **231** is typically such that the printhead die **251** (FIG. **8**) is not contacted by the wick **230**. The second fold **234** is located between the base **235** and a second leg **232**. The second leg **232** has a second end **237** disposed at a second height h**2** above the base **235**. The second height h**2** is greater than first height h**1**.

The second leg **232** is not intended to contact the bottom portion **205** of the carriage **200**. Rather, the second leg **232** provides a large area for evaporation of volatile ink components from the ink absorbed by the wick **230**.

The invention has been described in detail with particular reference to certain preferred embodiments thereof, but it will be understood that variations and modifications can be effected within the spirit and scope of the invention.

PARTS LIST

10 Inkjet printer system
12 Image data source
14 Controller
15 Image processing unit
16 Electrical pulse source
18 First fluid source
19 Second fluid source
20 Recording medium

21 Memory
100 Inkjet printhead
110 Inkjet printhead die
111 Substrate
120 First nozzle array
121 Nozzle(s)
122 Ink delivery pathway (for first nozzle array)
130 Second nozzle array
131 Nozzle(s)
132 Ink delivery pathway (for second nozzle array)
181 Droplet(s) (ejected from first nozzle array)
182 Droplet(s) (ejected from second nozzle array)
200 Carriage
201 Bushing
202 Holding receptacle
204 Opening
205 Bottom portion (of holding receptacle)
206 First flap
207 Second flap
208 First side wall
209 Second side wall
210 Viewing hole
211 Slot
212 Barrier
213 First end (of barrier)
214 Second end (of barrier)
215 Intermediate portion
216 First direction
217 Second direction
221 First type recording medium
222 Second type recording medium
225 First bar of anchor bar pair
226 Second bar of anchor bar pair
228 Identification mark for first type recording medium
229 Identification mark for second type recording medium
230 Wick
231 First leg
232 Second leg
233 First fold
234 Second fold
235 Base (of wick)
236 First end (of first leg)
237 Second end (of second leg)
240 Field of view
244 Connector
250 Printhead
251 Printhead die
253 Nozzle array
254 Nozzle array direction
255 Mounting support member
256 Encapsulant
257 Flex circuit
258 Connector board
262 Multi-chamber ink supply
264 Single-chamber ink supply
271 Ink ports
272 Compartment
274 Compartment
300 Printer chassis
301 Paper load entry direction (for L path)
302 Horizontal base (of printer)
303 Print region
304 Media advance direction
305 Carriage scan direction
306 Right side of printer chassis
307 Left side of printer chassis
309 Rear of printer chassis
312 Feed roller
314 Gear drive
320 Media input support
321 Pick roller
323 Idler roller
324 Discharge roller
325 Star wheel(s)
330 Maintenance station
352 Pick arm assembly
370 Stack of media
371 Sheet
381 Encoder sensor
382 Carriage guide rail
400 Absorbent material
405 Support pins
410 Light source
420 Platen
425 Optical sensor
430 Ink drops

The invention claimed is:

1. An inkjet printer comprising:

an inkjet printhead including a printhead die having an array of nozzles;

a media advance system for moving recording medium along a media path toward a print region;

a carriage for moving the inkjet printhead back and forth across the print region, wherein the carriage includes:

a holding receptacle for the inkjet printhead, the holding receptacle including a bottom portion having an opening into which the printhead die extends;

an optical sensor; and

a viewing hole in the bottom portion of the holding receptacle, the viewing hole providing an optical pathway between the optical sensor and a portion of the media path; and

a wick configured to contact the bottom portion of the holding receptacle distal to the printhead die which extends into the opening so that the wick does not contact the printhead and proximate the viewing hole for removing accumulated ink.

2. The inkjet printer of claim **1**, wherein the wick includes at least one fold.

3. The inkjet printer of claim **2**, wherein the wick includes:

a base disposed substantially parallel to the bottom portion of the holding receptacle of the carriage; and

a first leg having a first end disposed at a first height above the base, wherein the bottom portion of the holding receptacle of the carriage is located a distance above the base that is less than or equal to the first height.

4. The inkjet printer of claim **3**, wherein the wick further includes a second leg having a second end disposed at a second height above the base.

5. The inkjet printer of claim **4**, wherein the second height of the second end of the second leg is greater than the first height of the first end of the first leg of the wick.

6. Then inkjet printer of claim **1** further comprising a maintenance station, wherein the wick is disposed proximate the maintenance station.

7. The inkjet printer of claim **1** further comprising a light source disposed on a first side of the portion of the media path, wherein the carriage is disposed on a second side of the portion of the media path opposite the first side.

8. The inkjet printer of claim **1** further comprising a controller for analyzing signals from the optical sensor for identifying a type of recording medium.

9. The inkjet printer of claim 1, the carriage further including a first side wall extending from the bottom portion of the holding receptacle, wherein the optical sensor is disposed proximate the first side wall.

10. The inkjet printer of claim 9, the carriage further including a second side wall extending from the bottom portion of the holding receptacle opposite the first side wall.

11. The inkjet printer of claim 10, wherein the bottom portion of the holding receptacle includes:

a first flap extending between the first side wall and the opening; and

a second flap extending between the second side wall and the opening.

12. The inkjet printer of claim 11, wherein the viewing hole is disposed in the first flap.

13. The inkjet printer according to claim 1, wherein the viewing hole includes a slot.

* * * * *